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## The Industrial Development of India

INDIA'S progress toward industrial development has been one of the surprises of the war. Her accomplishments during the last four years have astonished those who have been pleased to style her the "Great Dependency." They have stirred the enthusiasm of those who, with indifferent success, have long advocated changes in processes of manufacture habitual to the East, and the extension of her activities beyond agricultural limits. They have vitalized the possibilities that lie in the application of modern methods to great natural resources by a population exceeding that of any other country except China.

The war greatly curtailed importations of manufactured goods from the United Kingdom, and stopped altogether those from Germany and Austria-Hungary. Meanwhile India's needs were largely increased because of the call made upon her by the Mother Country for supplies of every kind. The extent of her contribution will not be known until the war is over, but there are intimations that it has not been less satisfactory than her very substantial war loan and her investment in British Treasury notes. Even before the war there was a marked tendency toward commercial and industrial development, but war conditions have given increased force and directness to the movement. The British Government has recognized this fact, and, as a result of the investigations of the Committee on Commercial and Industrial Policy After the War, an India Trade Commissioner is to have offices in London, from which further industrial expansion in India will be promoted. Ultimately there will be show rooms for Indian products and manufactures so that buyers from all countries may see at first hand what is being accomplished.

### PROGRESS OF INDUSTRIAL EXPANSION

The ability and readiness of India to help forward this industrial expansion is indicated in the number of enterprises started since the war began. This movement became so marked as to induce the Government to increase last March the restrictions on flotations which had been provided in the Indian

Companies Act of 1913. This Act became effective on April 1, 1914, and in anticipation of it there were an unusual number of flotations during the fiscal year 1913-1914, so that the record for the year 1917-1918 shows a decrease of 22 per cent. in the number of new companies, if comparison is made with the pre-war year. If the comparison is confined to the war years the steady progress made is more clearly shown. In 1914-1915 there were organized 112 companies with an aggregate authorized capital of Rs. 4,43,20,000, or about \$14,377,408, and an average authorized capital of Rs. 3,96,000 or about \$128,462. The number of new companies formed in 1915-16 was 137, in 1916-17, 184; and in 1917-18, 278. The aggregate authorized capital for the 278 companies was Rs. 30,57,93,000 or about \$99,199,249 and the average authorized capital per company was Rs. 11,00,000 or about \$356,840. Not only was there a very heavy increase each year in the number of new industrial organizations founded, but there was also an increase in the average size of the organizations. The total number of companies registered during the four war years is 705 with a total authorized capital of Rs. 59,47,32,000, or about \$192,931,060. In addition to these investments in new companies there were of course a very great number of extensions of existing companies.

### HIDES AND SKINS

One of the first of her industries to which India turned with the idea of development after the war began was the tanning of hides. During 1913-14 India exported 1,632,000 hundredweight of hides and skins, totalling in value \$38,021,272, and 298,000 hundredweight of leather, totalling in value \$13,784,815. Germany took 388,409 hundredweight of raw hides, valued at \$993,414, and 12,794 hundredweight of raw skins, valued at \$37,598. Austria-Hungary took 237,829 hundredweight of hides and skins, valued at \$5,974,845. The United States took raw hides and skins to the value of \$11,510,590, and dressed or tanned hides and skins to the value of \$1,009,649.

## TANNING INDUSTRY GROWING

Now there is a good demand for all sorts of leather articles in India, including shoes, but vegetable tanning materials have been used almost exclusively. Tanning by chromium compounds has been extensively developed in the United States and Germany and this accounts for the heavy export of raw hides to these countries in the past. It has been estimated that half the amount of ox and cow hides sent to Germany and Austria yielded leather for 48,000,000 army boot uppers, while the buffalo hides supplied 49,000,000 army boot soles. The remaining half provided civilian footwear and enabled Germany and Austria to send back to India large quantities of box calf. Germany had acquired a practical monopoly of the hide and leather trade in India through a ring of companies in Calcutta which worked with the associations of tanners and dealers in Germany.

To insure against a return of that monopoly and to abolish the unprofitable practice of shipping out raw hides and skins which come back later as manufactured articles, attempts are now being made to establish the Indian tanning business on a sound basis. The use of chromium compounds instead of vegetable tanning materials is making rapid progress in various parts of the country, especially in the Madras Presidency and in the Native State of Mysore. The Director of Industries in Mysore reports that the Mysore Tannery is now getting hides from several parts of India. He proposes an experimental factory, modernly equipped, as a means of holding attention to what may be accomplished in this industry by India.

## JUTE MANUFACTURE

India has a practical monopoly of jute production, and jute mills have been long established. The war has had an accelerating effect here also. The number of mills at work has increased from 60 in 1913-14 to 74 in 1917-18. During the same period the number of looms has increased from 33,500 to 39,700 and the number of spindles from 691,800 to 824,300. The export of gunny bags has increased from 339,100,000 to 805,000,000 and of gunny cloths from 970,000,000 yards to 1,230,100,000 yards. The value of these manufactured exports has more than doubled in the last four years. A sign of the times is that the Britannia Engineering Works at Titaghur is now making jute mill machinery of a high class and is making a special effort toward standardization. The report of the British Committee on Commercial and Industrial Policy After the War calls attention to the severe competition of the India jute manufacturers. The report says that the Committee is

studying how to prevent too much of India's raw jute crop from going to Germany, and how to secure a sufficient supply to keep the mills of England and Scotland going.

## COTTON WEAVING

In a recent report Findlay Shirras, Director of Statistics, states that a marked expansion of the cotton weaving industry of India took place during the fiscal year ended last March. Production rose by more than 500,000,000 yards, or nearly 50% above the pre-war average, while imports by sea fell by 1,076,000,000 yards, or 41%, to 1,055,000,000 yards. As compared with the pre-war average the number of looms in 1916-17 rose from 88,100 to 110,800, or by 26%. In the twelve months from April, 1917, to March, 1918, the quantity of cotton goods produced in Indian mills was 660,576,000 pounds of yarn and 381,404,000 pounds of woven goods. This was a decrease by 61,849,000 pounds in yarn and an increase by 29,149,000 pounds in woven goods, the decrease in yarn production being in part accounted for by the scarcity of freight. The fact that coarse yarns decreased and that medium and fine yarns increased is regarded as noteworthy by those on the alert for any improvement in Indian manufacturers. The cotton industry in India dates from 1851, when the first mill was started. Fifty years later there were 5,800,000 hand-loom weavers and only 350,000 workers in cotton mills. All Indian cotton is of the short staple variety and this has tended to restrict weaving to coarser grades of cloth, but American long staple cotton is now being introduced, with promise of some success.

## ELECTRIC SUPPLY INSTALLATIONS

The development of electrical undertakings in India has been very slow, but a number of projects of unusual size and importance are now under way. There are now only 28 public electric supply undertakings with an aggregate capacity of 104,270 kilowatts. There are only 90 miles of single track electric road in the country, which is half the size of the United States. Of private installations there are 105 with a capacity of 200 kilowatts or more, and 397 with a less capacity.

Numerous projects are afoot for a greater use of electric power. A proposition to supply electric energy in Karachi has taken definite shape. The plant will cost about \$162,000. A building has already been erected at Ahmadabad for the installation of electrical machinery as soon as it can be obtained. In this city of 215,000 there are 50 large spinning and weaving mills, some of them employing 1,000 hands, and the introduction of electric power is looked for-

ward to as a great boon. In Calcutta the Electric Supply Corporation has connected to its system more than 44,000 fans, 370,000 lights, and more than 1,200 motors. At a recent meeting of electrical engineers there it was stated that in the future the lights and fans business, so far dealt in almost entirely, will become a comparatively negligible quantity. The superiority of electric fans to the punkah-wallahs—coolies who work fans by hand—is being steadily appreciated. The municipal committee of Simla, the summer capital of India, is considering an extension of the existing electric plant there.

#### HYDRO-ELECTRIC POWER PLANTS

Henry D. Baker, American Consul at Bombay, states that 34 mills in Bombay are under contract to use electric power from the plant of the Tata Hydro-Electric Power Company. This is by far the most important hydro-electric undertaking ever projected in India and is being carried out at an estimated cost of \$8,000,000. The first power was switched on in February, 1915. When completed the plant will provide about 60,000 horse-power. Power will be obtained ultimately from three great reservoirs with an aggregate capacity of 10,180,000,000 cubic feet of water. The transformers for this plant are being furnished from Schenectady, N. Y., and the hydraulic turbines from California. Insulators, transmission lines, underground cables, and other equipment was originally contracted for in England and Germany, but a considerable part of the proposed German product will undoubtedly now be sought in this country.

#### AMERICAN MACHINERY

All the electrical equipment for a proposed new installation at Cauvery Falls, in the Native State of Mysore will be manufactured in the United States. The first Cauvery water-power scheme was at the time of its inception one of the most important long-distance transmissions in the world. It attracted special interest in the United States as one of the first notable instances of the participation of American engineers in so great a project so far away from home. The plant is now netting in earnings about \$500,000 a year, the original capital outlay having been practically covered by subsequent profits.

#### IRON AND STEEL WORKS

Iron and steel working and engineering industries generally have received an impetus from the war. Shells, rivets, bolts, and nuts have been produced on an extensive scale. Machines such as were never produced before in India have been made. A company has been started to manufacture brass and gun-

metal work. One large firm has manufactured articles formerly largely imported, such as jute mill machinery, lathes, steam hammers, winding engines, and baling presses. The Tata Iron and Steel Company, whose plant gives to Sakchi, near Calcutta, the name of the "Pittsburgh of India," is constantly expanding to meet home and foreign demands. They are engaged now almost entirely on Government orders, particularly rails. In view of the fact that India has sent to the various war zones more than 1,500 miles of her own railroad track, besides 250 locomotives, and 4,500 cars, and that an extension of her railroad system is contemplated after the war, there appears to be no reason to doubt the continued growth of the iron and steel business. The plant of the Indian Iron and Steel Company, Ltd., one of the most recent establishments, occupies six and one-half square miles. A writer for an Indian journal said recently:

Indian resources are being rapidly developed. Iron and steel of excellent quality are available in India and the time will undoubtedly come when the British manufacturer finds his export trade rapidly decreasing, due to the increase in quantity and improvement in quality of articles made on the spot.

#### PLATE AND STRUCTURAL STEEL

In relation to the question of future supplies of steel plate, upon which schemes for developing India's shipbuilding now in contemplation turn, an Indian economist refers to the fact that the Tata Iron and Steel Company made a contract last December with the Munitions Board by which they agreed to build a plate mill and to have it in operation within two years from that date. They also made a contract for 10,000 tons of plates per annum for ten years. The company is building a plate mill capable of rolling plates of any desired length and up to 90 inches in width. This mill will contain two sets of three-high rolls, the necessary straightening rolls, and transverse and edging shears. It will have a capacity of about 100,000 tons per annum. In addition to the plate mill the company is building a large structural shop and a new steel casting plant. They will be able to make steel castings up to 35 tons in weight and be able to roll beams from three inches to 24 inches. Other structural materials, such as angles and channels, will be made.

#### NEW INDUSTRIES BORN OF WAR

There are many other industries which have extended their operations since the war began and which are preparing to expand still further after the war, but these will serve to show how the possibilities in the situation have appealed to the mind of India. Industrial development has long been regarded by many in India as the necessary accompaniment of

political progress and it is so considered in the report on Indian Constitutional Reforms issued last July. It is regarded now as likely that a Department of Industry will be established to assume supervision over the efforts now being made to expand industry. The great need is for the application of science to natural resources and it is alleged that under the educational system of India an insufficient number of men are being fitted for practical industries. Many progressive concerns are now seeking experts in industrial chemistry from Holland, Sweden and Denmark. Those of other countries are of course unobtainable now because of the war. Illustrative of the trend of thought in the country is the action of the Government of Mysore, one of the most progressive of Indian states, with respect to the Dacara Exhibition of this year, recently held. It was decided that this should be an All-India Exhibition. The main purpose of it is to encourage the arts and industries of the State by displaying the material resources, processes of manufacture, and the products of this State along with those from other parts of India. Particular stress is laid by the promoters upon the methods of manufacture in vogue and the possibility of improving them

#### BANKING CONNECTION WITH THE UNITED STATES

Because the opportunity for further industrial development in India is so apparent, and because that development will require financial assistance on a large scale, unusual importance is attributed to the organization of the Tata Industrial Bank, for which, as recently announced, the Guaranty Trust Company of New York, has become the correspondent

in this country. A writer in "Capital," a financial and economic journal of Calcutta, had the following to say regarding this bank, the first of its kind to be established in India:

The Tata Bank is intended, as far as possible, to guide industrial investment into sound channels. In undertaking all preliminary investigations, and floating industrial issues under its own ægis, it will fulfil useful functions. It has another advantage. It creates banking machinery, as far as this country is concerned, of an entirely new character. There has been bitter complaint that industrial enterprises have received inadequate support from commercial banks. The Tata Bank removes all ground for complaints of that character, its *raison d'être* being that industrial financing requires banks constituted specially for that purpose. It is not the business of either the Presidency or Exchange banks to finance industries. They are constituted to finance trade and trade alone. The need of industrial banks has often been felt. It has now received practical recognition under the best possible auspices. As Sir R. N. Mookerjee, Chairman of the local board of management, observed in asking Lord Ronaldshay to declare the Calcutta Branch open:

"India for some time past, and in an increasing measure as the war has progressed, has been thrown more and more on her own latent resources. New industries have sprung into existence and we stand on the threshold of an era of great industrial development!"

Every new enterprise of a competitive character meets with criticism, but taking it by and large we believe the Tata Bank is generally accepted as an institution containing the potentiality of useful and profitable achievement in the interest of Indian economic development.

The Asia Banking Corporation, which was recently formed by the Guaranty Trust Company and a group of associated banks, will act as correspondent of the Tata Industrial Bank in the Far East. A large part of India's trading is done with China, Japan, Java, and other parts of Eastern Asia, where the Asia Banking Corporation will ultimately operate.